REMARKS

By this amendment, Applicants now provide an amended set of claims which more clearly specify the subject matter of the present invention and which overcome minor objections to the wording of the claims. In addition, minor objections to the specification are overcome as well. In all cases, the amendments to the specification and claims are supported in the original application, and no new matter has been entered. As will be set forth below, it is clear that the subject matter of the present claims is not disclosed or suggested in the prior art references, and that the Examiner in the previous Official Action only made a cursory examination of the relevant sequences of the present application, the priority application and the prior art which resulted in numerous incorrect statements and findings. As a result, the Examiner's rejections were in error, and in light of the present amendment and arguments as set forth below, are respectfully traversed.

As an initial example of the Examiner's errors with regard to adequately assessing the relevant sequences of the application and its priority document, the Examiner refused to grant the proper date of priority for the present application, namely the filing date of provisional application Ser. No. 60/036,139, filed January 21, 1997 which is referred to at page 1 of the present application. In the Official Action, the Examiner stated that "The sequences disclosed in [the] instant application do not appear to be disclosed in application 60/036139. Consequently, in the absence of evidence to the contrary, the filing date of the instant application will be used as the priority date." Official Action, Page 3.

However, such a statement could have only been made if one only performed a cursory review of the priority document and did not look closely at the actual document and the sequences disclosed therein. Contrary to the Examiner's erroneous statement, all of the sequences of the presently claimed invention are in fact disclosed in the priority document, a fact that would have been apparent if one takes a thorough look at the priority document and compares it with the present application which includes all of the same sequences. In particular, the sequences of the present application were included in the provisional application 60/036,139 (albeit in different order and sequence ID numbers) at pages 82, 83, 84, 85, 88, 100, 104, and 105, and in FIG. 1B, FIG. 2, FIG. 4A, FIGS. 10A/10B, and FIGS. 11A/11B.

Accordingly, the Examiner's refusal to afford a priority date of January 21, 1997 based on his statement that "the sequences disclosed in [the] instant application do not appear to be disclosed in application 60/036139" is in error, and the priority date of the present application is January 21, 1997, the filing date of provisional application 60/036,139.

In the Official Action, the Examiner objected to the specification on the basis that the incomplete ATCC designations were made at page 9. This objection has now been traversed in that the incomplete designations have now been deleted. In addition, Applicants have corrected an inadvertent error in the specification with regard to the identification of SEQ ID NOS at page 104.

The Examiner also objected to the specification on the basis that "SEQ ID NO:3 appears to be identical to SEQ ID NO:4 and SEQ ID NO:9 appears to be identical to SEQ ID NO:10." This statement is not correct and once again reflects the fact that the Examiner did not make a careful review of the relevant sequences of the present application and the prior art. In fact, the sequences of the peptides of the present invention are mutations or truncations of wild type peptides which have been made in order to obtain peptides that do not bind to fibronectin and thus can be utilized to generate effective antibodies in accordance with the present invention. In this regard, the differences between the wild type peptides and the mutant peptides in accordance with the present invention, including the differences between SEQ ID NO:3 (DU wild type) and SEQ ID NO:4 (DU mutant), and between SEQ ID NO:9 (DU wild type) and SEQ ID NO:10 (DU mutant) are shown specifically in Table 2 at page 92 of the specification, in addition to the sequence listing which shows these differences as well. In many cases, the mutant peptide sequences of the invention are indeed point mutations wherein a single residue has been changed, but indeed the point of the invention is to generate peptides that did not themselves bind to fibronectin, such peptides thus being useful in that they gave rise to antibodies which result in protection against the binding of bacterial cells to fibronectin. As set forth below, it is clear that none of the prior art references disclose or suggest the generation of antibodies to peptides from the fibronectin binding domain which do not specifically bind to fibronectin, much less the specific peptide sequences of the presently claimed invention.

In the Official Action, the Examiner rejected the claims on the basis of the use of the term "consists essentially of" with regard to the peptide sequences of the claims, and asserted that the use of such a term was unclear in the context of a polypeptide sequence. However, the Examiner provided no support for this conclusion, which is not surprising since the case law regarding the use of this term make it clear that it applies to the present situation, and indeed other patents have issued which use the type of "consisting essentially of" language that Applicants use here with regard to a peptide sequence (see, e.g., U.S. Pat. No. 6,288,214, Claims 1 and 7, copy of claims attached).

Contrary to the Examiner's position, it is well settled that the claim language "consisting essentially of" is an appropriate term for a claim that covers the specific language of the claims and additional elements which do not affect "the basic and novel characteristics" of the claimed compound. See *In re Janakirama-Rao*, 137 USPQ 893 (CCPA 1963), citing *Ex parte Davis*, 80 USPQ 448 (Pat. Off. Bd. App.1948). There is thus no case law which supports the Examiner's proposition that the use of this term with regard to amino acid sequences is vague or unclear, particularly in the present case wherein the "basic and novel characteristics" are the fact that the specific peptide does not bind to fibronectin and that the generation of antibodies thereto will be useful in preventing bacteria from binding to fibronectin and thus can be used to treat or protect against bacterial infection.

Moreover, the Examiner is also incorrect in placing a burden on the applicant to disclose what compounds materially change the nature of the claimed invention since this is never a requirement of the "consisting essentially of" language particularly where, as here, the basic and novel characteristics of the claimed subject matter are clearly defined and would be easily recognized by one of ordinary skill in this art. See *Atlas Powder Co. v. E.I. Dupont De Nemours & Company*, 224 USPQ 409 (Fed. Cir. 1984). In *Atlas*, the patentee disclosed a list of candidate ingredients which could act as emulsions as disclosed in the invention. The Federal Circuit upheld the validity of the claims and affirmed the district court's determination that the "consisting essentially of" claim language was appropriate because, *inter alia*, one skilled in the art would have known how to select the proper emulsifying ingredients on the basis of the claims. 224 USPQ at 413-414. In the present case, the basic and novel characteristic associated with the peptides in accordance with the claims is that they do not bind to fibronectin, and this characteristic is one that is readily testable by one of ordinary skill in the art.

Similarly, the Examiner's comment that it is not possible to know all of the sequences that could be added to the peptide sequences of the present invention without changing the novel and basic properties is irrelevant since the Federal Circuit has held that the law "does not require that an applicant describe in his specification every conceivable and possible future embodiment of his invention." See *SRI Intern. v. Matsushita Elec. Corp. of America*, 227 USPQ 577, 586 (Fed. Cir. 1985). The only relevant issue is whether one of ordinary skill in the art would be able to determine whether a particular peptide falls within the scope of the claim language by virtue of

these properties, and since the skilled artisan would readily be able to determine if a particular peptide sequence bound to fibronectin, the claims are adequately enabled even if some routine experimentation is required. See *Atlas Powder Co.*, 224 USPQ at 413.

Finally, contrary to the Examiner's position that the "consists essentially of" language cannot properly be used with a peptide sequence, it is in fact the case that the "consisting essentially of" language has been validly used with peptide sequences in issued US Patents, including for example U.S. Pat. No. 6,288,214, Claims 1 and 7, wherein the language is used with a SEQ ID for a peptide sequence. See attached Claims from U.S. Pat. No. 6,288,214.

Accordingly, there is no support in the case law whatsoever for the Examiner's position, and contrary to the Examiner's assertions, the Applicants are thus properly using the "consists essentially of" language in the claims to describe the peptides used to generate antibodies in accordance with the claimed invention. Moreover, as has been previously shown by Applicants, this claim language is particularly appropriate because Applicants have shown that there are "basic and novel characteristics" of the claims which makes these claims amenable to the "consists essentially of" language. See MPEP 2111.03; *PPG Industries v. Guardian Industries*, 156 F.3d 1351 (Fed. Cir. 1998); and the Declaration of Dr. Joseph M. Patti, previously submitted on September 20, 2001, copy attached hereto. The claims are thus entirely proper under 35 U.S.C. §112, and the Examiner's rejection on the basis of this provision is respectfully traversed and should be withdrawn.

In the Official Action, the Examiner made minor objections to other aspects of the claim language, and these minor objections have been overcome by Applicants' present amendments to the claims. Accordingly, the claims in their present form are entirely proper under 35 U.S.C. §112, and the Examiner's rejections on the basis of this provision are respectfully traversed.

In the Official Action, the Examiner rejected the claims on the basis of the Sun et al. article which was published in February, 1997, a month after the filing of the priority document in this case, namely provisional application 60/036,139 which was filed January 21, 1997. In fact, the Sun et al. article, which was co-authored by one of the inventors of the present application, Dr. Martin McGavin, incorporates some of the subject matter of the provisional application which now supports the present claims. Compare , e.g., FIGS. 10A/10B and 11A/11B of provisional application Ser. No. 60/036,139 with Figs. 3 and 4, respectively, of the Sun et al. article. The Sun et al. article which was only published after the January, 1997 filing date of the priority document of the present application, namely provisional application 60/036,139, is thus not prior art to the present claims, and the Examiner's rejection on the basis of this article is respectfully traversed and should be withdrawn.

In the Official Action, the Examiner rejected the claims on the basis of Hook et al. WO 92/02555, Hook et al. US Patent 5,440,014, and the Huff et al. 1994 article. However, in each case, the Examiner conceded that these references did not disclose or suggest the generation of antibodies from peptides from the fibronectin binding domain

that did not bind to fibronectin, instead basing the rejections on the assertion that a small number of the peptide sequences from the present application had been disclosed in those references. In particular, it was asserted that the Hook PCT disclosed SEQ ID NOS 3, 9, 61, 87, and 104; that the Hook US Pat. disclosed 3, 9, 61 and 104; and that Huff disclosed 5, 9 and 103. However, SEQ ID NOS 3, 5 and 9 and 87 are no longer part of the present claims, and contrary to the Examiner's assertions, these references in fact do not disclose or suggest the exact sequences of SEQ ID NOS 61, 103 or 104, which becomes apparent when one closely compares the actual sequences of the present claims with the sequences of the cited references which differ in one or more ways from the actual claimed sequences. Since it is conceded that these references do not disclose or suggest the claimed method of generating antibodies from peptides which do not bind to fibronectin, and since these references do not disclose or suggest the particular peptides of the present claims, the claimed invention is clearly patentable over the cited references.

In short, in light of the fact that the cited references clearly do not disclose or suggest the present invention, namely the generation of antibodies against peptides from the fibronectin binding domain that do not bind to fibronectin, which are useful in that they can more effectively prevent bacteria from binding to fibronectin, the present claims are patentable over the cited references, and the Examiner's rejection on the basis of those references is respectfully traversed and should be withdrawn.

In light of the amendments and arguments as set forth above, Applicants submit that the application in its present form overcomes all prior rejections of the Examiner and is in condition for immediate allowance. Such action is earnestly solicited.

Respectfully submitted,

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ATTACHMENT A

Clean Amended Substitute Specification Paragraphs

At page 9, lines 17-21, please replace the paragraph with the following clean amended paragraph as follows:

Both polyclonal antibodies and monoclonal antibodies that inhibit the binding of fibronectin binding proteins to fibronectin are provided herein. Preferred are antibodies that bind to the same epitope as monoclonal antibody 9C3 or 11A5, including the monoclonal antibodies 9C3 or 11A5 themselves.

At page 104, line 15, please replace Table 8 with the following clean amended Table 8 as follows:

Table 8

Peptide	SEQ ID NO:	Sequence
DU wild type	3	ADVVEYEEDTNPGGGQVTTESNLVEFDEEST
DU 13P	4	ADVVEYEEDTNPPGGQVTTESNLVEFDEEST
DU 14P	54	ADVVEYEEDTNPGPGQVTTESNLVEFDEEST
D1 wild type	56	QNSGNQSFEEDTEEDKPKYEQGGNIVDIDFSDSVPQIHG
D1 22P	57	QNSGNQSFEEDTEEDKPKYEQPGNIVDIDFSDSVPQIHG
D2 wild type	58	QNKGNQSFEEDTEKDKYEHGGNIIDIDFDSVPHIHG
D2 22P	59	QNKGNQSFEEDTEKDKYEHPGNIIDIDFDSVPHIHG

ATTACHMENT B

Marked Up Copy of Specification With Amended Paragraphs

At page 9, lines 17-21, please amend the paragraph as follows:

Both polyclonal antibodies and monoclonal antibodies that inhibit the binding of fibronectin binding proteins to fibronectin are provided herein. Preferred are antibodies that bind to the same epitope as monoclonal antibody 9C3 ~~(ATCC HB xxxxx)~~ or 11A5 ~~(ATCC HB yyyyy)~~, including the monoclonal antibodies 9C3 ~~(ATCC HB xxxxx)~~ or 11A5 ~~(ATCC HB yyyyy)~~ themselves.

At page 104, line 15, please amend Table 8 as follows:

Table 8

Peptide	**SEQ ID NO:**	**Sequence**
DU wild type	3	ADVVEYEEDTNPGGGQVTTESNLVEFDEEST
DU 13P	4	ADVVEYEEDTNPPGGQVTTESNLVEFDEEST
DU 14P	54	ADVVEYEEDTNPGPGQVTTESNLVEFDEEST
D1 wild type	~~55~~56	QNSGNQSFEEDTEEDKPKYEQGGNIVDIDFSDSVPQIHG
D1 22P	~~56~~57	QNSGNQSFEEDTEEDKPKYEQPGNIVDIDFSDSVPQIHG
D2 wild type	~~57~~58	QNKGNQSFEEDTEKDKYEHGGNIIDIDFDSVPHIHG
D2 22P	~~58~~59	QNKGNQSFEEDTEKDKYEHPGNIIDIDFDSVPHIHG

ATTACHMENT C

Clean Amended Claims

Following herewith is a clean copy of the amended claims.

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54. (Amended) A method of generating an antibody that binds to a fibronectin binding domain of a fibronectin binding protein and inhibits binding of said fibronectin binding protein to fibronectin, comprising administering to a human or animal a pharmaceutical composition comprising an immunologically effective amount of a peptide of a fibronectin binding domain of a fibronectin binding protein that does not bind to fibronectin, wherein said peptide consists essentially of an amino acid sequence selected from the group consisting of SEQ ID NOS:2, 4, 6, 8, 10, 12-55, 57, 59-86, 88-105.

55. (Amended) The method according to Claim 54, wherein said peptide that does not bind to fibronectin is a truncated peptide.

56. (Amended) The method according to Claim 54 wherein said peptide that does not bind to fibronectin is a mutated peptide.

57. (Amended) The method according to Claim 54 wherein said pharmaceutical composition is prepared by:

a) contacting a peptide with fibronectin under effective binding conditions and identifying a peptide that does not bind to fibronectin; and

b) adding said peptide that does not bind to fibronectin to a pharmaceutically acceptable diluent to form said pharmaceutical composition.

58. (Amended) The method according to Claim 57 wherein a plurality of peptides are contacted with fibronectin under effective binding conditions, and at least one peptide that does not bind to fibronectin is identified.

59. (Amended) The method according to Claim 54 wherein the pharmaceutical composition is administered to a human or animal suspected of having, or at risk of developing, a microbial infection.

ATTACHMENT D

Marked-Up Claims

Following herewith is a marked-up copy of the amended claims.

54. (Amended) A method of generating an antibody that binds to a fibronectin binding domain of a fibronectin binding protein and inhibits binding of said fibronectin binding protein to fibronectin, comprising administering to a human or animal a pharmaceutical composition comprising an immunologically effective amount of a peptide of a fibronectin binding domain of a fibronectin binding protein that does not bind to fibronectin, wherein said peptide consists essentially of [a peptide] an amino acid sequence selected from the group consisting of [amino acid sequences] SEQ ID NOS:[2-10, 13, 17-20, 54-61, 86, 87, 103 and 104] 2, 4, 6, 8, 10, 12-55, 57, 59-86, 88-105.

55. (Amended) [A] The method according to Claim 54 wherein said peptide that does not bind to fibronectin is a truncated peptide.

56. (Amended) [A] The method according to Claim 54 wherein said peptide that does not bind to fibronectin is a mutated peptide.

57. (Amended) [A] The method according to Claim 54 wherein said pharmaceutical composition is prepared by:

a) contacting a [candidate] peptide with fibronectin under effective binding conditions and identifying a [positive candidate] peptide that does not bind to fibronectin; and

b) [dispersing] adding said [positive candidate] peptide that does not bind to fibronectin [in] to a pharmaceutically acceptable diluent to form said pharmaceutical composition.

58. (Amended) [A] The method according to Claim 57 wherein a plurality of [candidate] peptides are contacted with fibronectin under effective binding conditions, and [a positive candidate] at least one peptide that does not bind to fibronectin is identified.

59. (Amended) [A] The method according to Claim 54 wherein the pharmaceutical composition is administered to a human or animal suspected of having, or at risk of developing, a microbial infection.